Climate-proofing the Global Financial Safety Net*

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Ulrich Volz**

SOAS University of London

German Development Institute

Although climate change poses a serious threat to macrofinancial stability and economic development, the global financial safety has so far failed to sufficiently address this challenge. This article reviews the extent to which the International Monetary Fund (IMF) has started to integrate climate change in its analytical and operational frameworks, showing significant shortcomings in addressing the risks emanating from climate change. Regional financing arrangements (RFAs) have to date not engaged or only very little in addressing climate-related risks. Against this backdrop, this article argues that the IMF and also RFAs need to climate-proof their policies and frameworks and puts forward eight recommendations: (i) mainstream systematic and transparent assessments of climate-related financial risks in all operations; (ii) introduce consistent, systematic, and universal appraisal and treatment of physical and transition risks in surveillance and monitoring for all countries; (iii) ensure that all policy recommendations are aligned with the Paris climate goals; (iv) advance disclosure of climate-related financial risks and promote sustainable finance and investment practices; (v) support member countries in mainstreaming climate risk analysis in public financial management; (vi) support climate-vulnerable countries in dealing with debt sustainability problems; (vii) develop lending instruments for climate emergency financing; and (viii) in the case of the IMF, explore options to use SDRs to support climate-vulnerable countries.

Keywords: Global financial safety net, International Monetary Fund, climate-related macrofinancial risks.

JEL codes: E6, F33, G18, Q54.

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**SOAS, University of London, Thornhaugh Street, Russell Square, London WC1H 0XG, UK uv1@soas.ac.uk.

1. Introduction

Climate change is one of the greatest challenges facing humanity. A growing body of literature has shown that the physical and transition impacts of climate change pose material risks to macrofinancial stability (e.g. NGFS 2019, Bolton et al. 2020, Semieniuk et al. 2021) and ultimately sovereign risk (Volz, Beirne et al. 2020). Importantly, climate-related macrofinancial risks threaten not only small island development states but also larger and more advanced economies.

Climate change should therefore be a prime concern for the institutions that form the global financial safety net (GFSN), including the International Monetary Fund (IMF) as well as regional financing arrangements (RFAs) such as the Arab Monetary Fund, the Chiang Mai Initiative Multilateralisation with its surveillance unit ASEAN+3 Macroeconomic Research Office, the Eurasian Fund for Stabilization and Development, the European Stability Mechanism, and the Latin American Reserve Fund.[1] The IMF has only recently come to recognise that climate change may be a "macro-critical" factor, that is, crucial to the achievement of macroeconomic and financial stability, which is at the core of the Fund's mandate. In 2015, the IMF recognised climate change as an "emerging structural issue". In November 2015, then Managing Director Christine Lagarde acknowledged that "[t]he Fund has a role to play in helping its members address those challenges of climate change for which fiscal and macroeconomic policies are an important component of the appropriate policy response." In October 2019, the IMF's new Managing Director Kristalina Georgieva made clear right at the start of her tenure that she considers climate change a key responsibility for the IMF. Since then, she has made countless statements on the importance of climate change for the IMF. At the operational level, however, the Fund has been slow to address climate-related macrofinancial risks, even though efforts have increased markedly since 2019. Among RFAs, there has been to date very little or no engagement at all with climate-related risks.

This article reviews the extent to which the IMF and RFAs have started to integrate climate change in their analytical and operational frameworks and puts forward an operational agenda for the IMF as well as RFAs to support their membership in better managing and mitigating climate-related risks. The article argues that, going forward, the IMF and RFAs should (i) mainstream systematic and transparent assessments of climate-related financial risks in all their operations; (ii) introduce consistent, systematic, and universal appraisal and treatment of climate-related physical and transition risks for all countries in Article IV consultations, debt sustainability and financial sector assessments in the case of the IMF and comparable surveillance and monitoring exercises in the case of RFAs; (iii) ensure that all policy recommendations are aligned with the Paris climate goals; (iv) advance disclosure of climate-related financial risks and promote sustainable finance and investment practices; (v) support member countries in mainstreaming climate risk analysis in public financial management; (vi) support climate-vulnerable countries in dealing with debt sustainability problems; (vii) develop

[1] The global financial safety net also comprises bilateral or multilateral central bank swap arrangements. See, for instance, McKay et al. (2011).

lending instruments for climate emergency financing; and (viii) in the case of the IMF, explore options to use Special Drawing Rights (SDRs) to support climate vulnerable countries.

The article is structured as follows. Section 2 reviews how the IMF has so far addressed climate-related risks in its analytical and operational work. Section 3 reviews the extent to which RFAs have thus far addressed climate change. Section 4 discusses options for the IMF as well as RFAs to incorporate climate risks into their operational frameworks and thereby climate-proof the GFSN. Section 5 concludes.

2. The IMF and climate change

"At the IMF we recognize that the climate actions we take in our institution and globally are paramount for our future. We have embraced climate in everything we do." – Kristalina Georgieva, December 2020

The IMF recognised climate change as an emerging structural issue in 2015 (Bretton Woods Project 2019). In November 2015, Christine Lagarde, the IMF's Managing Director at the time, acknowledged that "[t]he Fund has a role to play in helping its members address those challenges of climate change for which fiscal and macroeconomic policies are an important component of the appropriate policy response" (Lagarde 2015: 1). Lagarde asserted that, while the Fund is "is not an environmental organization […] climate change poses significant risks for macroeconomic performance and several of the appropriate policy responses lie within the Fund's expertise" (ibid.). Lagarde identified six roles that the Fund should play: (i) analytical work; (ii) technical assistance, surveillance and training; (iii) promoting dialogue, (iv) integrating natural disaster risks and preparedness strategies in macroeconomic forecasts and debt sustainability analyses; (v) helping countries incorporate adaptation strategies in medium-term budget frameworks; and (vi) working closely with other institutions to encourage consistent climate-related disclosures, prudential requirements, and stress testing for the financial sector (Table 1).[2]

Table 1. The IMF's role in addressing climate change according to Christine Lagarde, 2015

Analytical work underpins the Fund's contributions	The IMF draws on the specialist analysis of others contributing within their mandates (e.g., the Intergovernmental Panel on Climate Change, the International Energy Agency, the World Bank) and focuses on the practical design and administration of fiscal instruments for climate policy and broader energy policy. For example, Fund staff work has quantified, for over 160 countries, the environmental, fiscal, and economic benefits of energy pricing reform, including the removal of subsidies. This information helps policymakers craft the specifics of legislation to meet environmental and fiscal objectives and enlightens stakeholders on the case for reform. An

[2] Lagarde's piece draws from an IMF Staff Discussion Note by Farid et al. (2016).

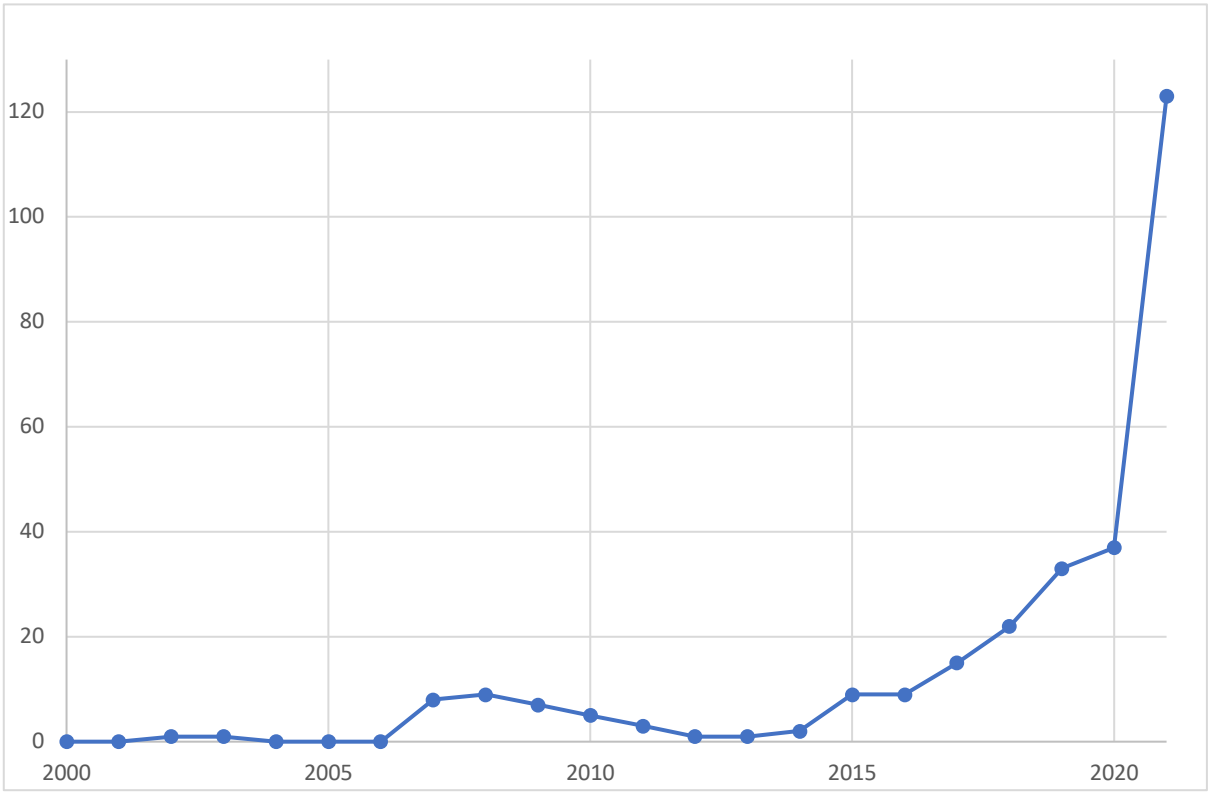
	overarching issue, which staff intends to analyze, is the growth impact of transitioning to a less carbon-intensive economy.
Technical assistance, surveillance and training	The Fund is well positioned to provide technical assistance and training, given its global membership and expertise in fuel tax design, tax administration, and energy price reform. Climate and energy policy developments are sometimes discussed in Article IV consultations, and this seems likely to become increasingly common. Next steps on further integration in surveillance will be informed by assessing experience with selected pilot countries.
Promoting dialogue	The Fund collaborates with other international organizations (e.g., World Bank, Organisation for Economic Co-operation and Development, and United Nations Environment Programme) to promote policy dialogue among finance ministries, emphasizing the benefits of carbon pricing as one component of an effective tax structure.
Integrating natural disaster risks and preparedness strategies in macroeconomic forecasts and debt sustainability analyses	Low-income and small developing states are especially vulnerable to increasing risks of extreme weather events. Staff, collaborating with other international institutions, will work with countries to develop comprehensive risk management frameworks to assess risks and determine the right mix of building domestic buffers versus risk transfer through insurance or financial market instruments, while tailoring investment and growth policies to building resilience.
Help countries incorporate adaptation strategies in medium-term budget frameworks	More analysis of the macroeconomic implications of adaptation policies is needed. Where macro-critical, the fiscal costs of adaptation, and the effective use of climate- related financial flows, will need to be integrated in sustainable medium-term fiscal frameworks.
Work closely with other institutions to encourage consistent climate-related disclosures, prudential requirements, and stress testing for the financial sector	Staff work, in close coordination with other institutions, such as the World Bank. Financial Stability Board and International Association of Insurance Supervisors (IAIA) will: i) enhance understanding of the transmission mechanisms from climate risks to financial stability, ii) contribute to the design of appropriate disclosure rules for climate risk exposure, iii) provide technical assistance to promote safe and sound development of markets and instruments to help manage climate-related risks, iv) contribute to the development of best practices for stress-testing for climate risks, and v) support ongoing work on globally consistent prudential requirements for the insurance sector, including on a Global Insurance Capital Standard being developed by IAIS to allow for catastrophe risk in capital requirements.

Source: Lagarde (2015).

Although the IMF was rather slow to follow up on this agenda set out by Lagarde, there has been a steady increase in the number of publications and events with substantial reference to climate change since 2016 (Figure 1). The most notable early outputs include a chapter on weather shocks on economic activity in low-income countries in the October 2017 World Economic Outlook (WEO) report (IMF 2017a), volumes on 'Resilience and Growth in the Small States of the Pacific' (Khor et al. 2016) and 'Unleashing Growth and Strengthening Resilience in the Caribbean' (Alleyne et al. 2017), and a policy paper on 'Small States' Resilience to Natural Disasters and Climate Change – Role for the IMF' (IMF 2016). Still, at the time only relatively

few people at the IMF regarded climate change as a "macro-critical" factor, i.e., crucial to the achievement of macroeconomic and financial stability, which is at the core of the Fund's mandate.

Figure 1. Number of IMF publications with substantial reference to climate change, January 2000 – December 2021



Source: Compiled by author.

Note: Publications which show at least ten references to 'climate change', 'climatic', 'climate risk' and/or 'climate-related' or provide at least one whole paragraph, box or section on the topic are categorised as having "substantial reference" to climate change.

The IMF's attention to climate change increased markedly in 2019. That year, IMF staff produced a growing number of working papers and reports addressing important dimensions of climate change, including the fiscal challenges of and responses to climate change (IMF 2019a, 2019b) and sustainable finance and environmental, social and governance reporting (IMF 2019c). The IMF also published a review of macroeconomic and financial policies for mitigating climate change (Krogstrup and Oman 2019). On top of this, the IMF became an observer of the Central Banks and Financial Supervisors Network for Greening the Financial System (NGFS), a group of 108 central banks and supervisory authorities (and 17 observers)

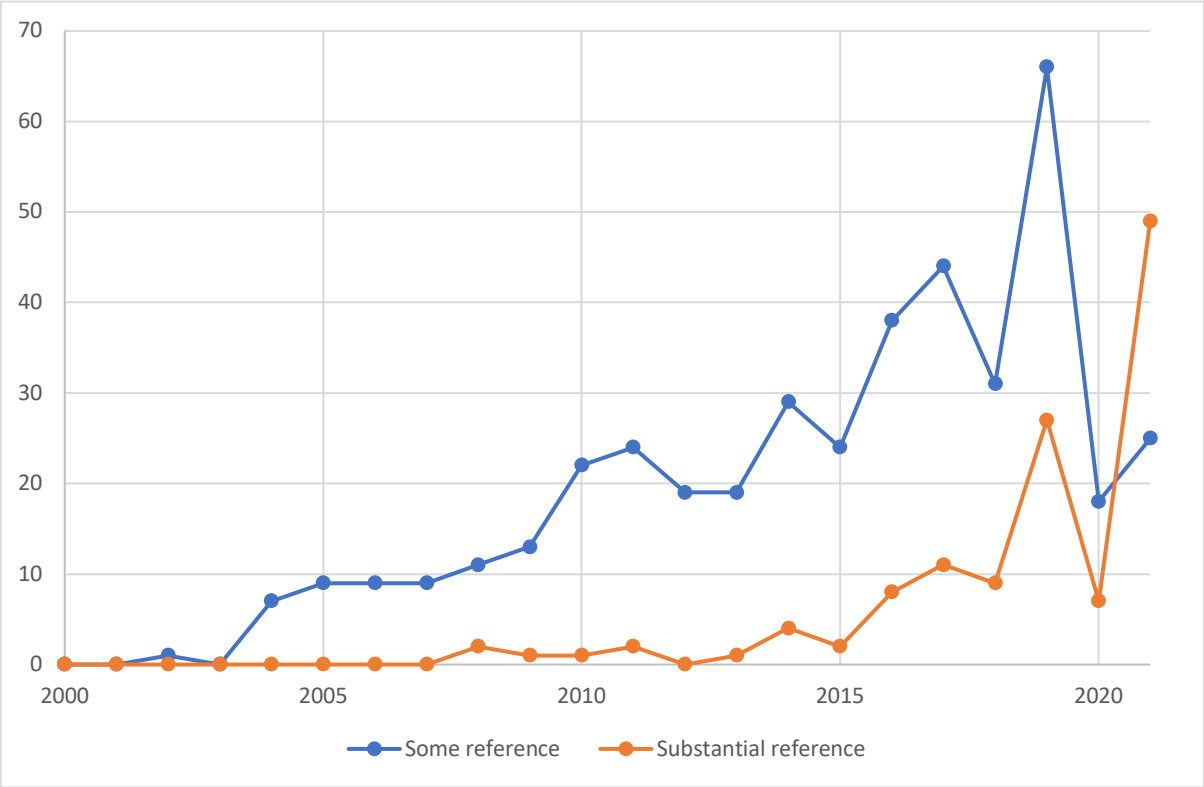
committed to better understanding and manage the financial risks and opportunities stemming from climate change.[3]

Upon taking up her role in October 2019, the new Managing Director Kristalina Georgieva made clear that she considers climate change a key responsibility for the IMF. At the 2019 Annual Meetings of the IMF and the World Bank Group in October, Georgieva acknowledged the centrality of climate risks for the Fund's work: "The criticality of addressing climate change for financial stability, for making sure that we can have sustainable growth, is so very clear and proven today, that no institution, no individual can step from the responsibility to act. For the IMF, we always look at risks. And this is now a category of risk that absolutely has to be front and centre in our work" (IMF 2019d).

However, in its operational work – comprising surveillance, technical assistance and training, and emergency lending and crisis support – the IMF has been rather slow to address climate-related financial risks. In its surveillance and monitoring operations, which are carried out at the global, regional and country levels, the IMF seeks to identify potential risks to macroeconomic and financial stability and puts forward policy adjustments that should support economic growth, promote financial and economic stability, and prevent the build-up of financial risks. At the country level, surveillance centres around the annual Article IV consultations. As can be seen in Figure 2, the IMF has only recently started to address climate change in some of its Article IV consultations with its member countries. Since the early 2010s, when climate change was still virtually absent from Article IV consultations, only a small number of Article IV reports per year included some references to climate change. In 2008, the Article IV reports for the Marshall Islands and Palau were the first ones to make substantial reference to climate change. A large increase was recorded in 2019, when 27 Article IV reports made substantial reference to climate change, and a further 66 Article IV reports made some reference to climate change. 2020 saw a big drop in the overall number of Article IV consultations that took place, which led to a big drop in Article IV reports (both with and without consideration of climate change). In 2021, the number of Article IV reports with substantial mentioning of climate change increased markedly to 49, indicating clearly that IMF staff are increasingly paying attention to climate issues. However, in the majority of Article IV consultations, climate change and climate-related macroeconomic and fiscal risks still play no role. And even in those Article IV reports that make "substantial" references to climate change, these are not based on a systematic and rigorous analysis of impacts and risks but rather generic references.

[3] Numbers as of 14 February 2022.

Figure 2. Number of Article IV reports with reference to climate change, January 2000 – December 2021



Source: Compiled by author.

Note: Included are all the published staff reports of Article IV consultations that took place between January 2000 and December 2021 that include the words 'climate change', 'climatic', 'climate-related' or 'climate risk'. Article IV reports which show at least ten references to 'climate change', 'climatic', 'climate risk' and/or 'climate-related' or provide at least one whole paragraph, box or section on the topic are categorised as making "substantial reference" to climate change. All others are categorised as making "some reference" to climate change. The year refers to the year in which the consultation was held, not the year of publication as a staff report.

A survey of the IMF's Article IV reports for 2019 for five countries with ongoing coal sector expansions (India, Indonesia, Mozambique, the Philippines, and South Africa) showed that the IMF's analysis did not sufficiently recognise climate-related macroeconomic risks (Mainhardt 2020). For India, Indonesia, and South Africa, climate change was not considered a macroeconomic risk in these Article IV reports. For Mozambique and the Philippines, climate change was deemed a macroeconomic risk, but only stemming from physical impacts of climate change. Transition risks were not considered at all in these reports. Moreover, Mainhardt (2020) highlights that the Article IV reports for India, Indonesia, and Mozambique were supportive of tax incentives for fossil-fuel related infrastructure investments, even though new investments in coal and other fossil fuels enhance stranded asset and transition risks for the economy. A review of Article IV reports that the IMF conducted between the

signing of the Paris Agreement in December 2015 and March 2021 by Sward et al. (2021: 4-5) finds that "in 105 member countries, despite the urgent need to reduce greenhouse gas emissions to meet global climate goals, the IMF's policy advice endorsed, or directly supported, the expansion of fossil fuel infrastructure."

At the country level, the IMF conducts two surveillance activities jointly with the World Bank: Financial Sector Assessment Programs (FSAPs), and Debt Sustainability Analyses (DSAs) for low-income countries. While a background paper for the 2021 FSAP review claims that "FSAPs have been assessing the impact of climate-related natural disaster events on financial stability, including banks, for some time" (IMF 2021a: 41), this is a rather generous interpretation.[4] To date, climate change has played no or little role in most FSAPs, and where it does, it is covered in the parts produced by the World Bank. The Philippines FSAP (which was conducted between June 2019 and October 2020) for the first time comprised serious climate change risk analysis (conducted by the World Bank), examining banks' solvency for physical risks from typhoons (Regelink 2019, IMF 2021b). In 2020, the IMF piloted the analysis of transition risks in Norway's FSAP, analysing the impacts of three different transmission channels for transition risk shocks to the financial system (Grippa and Mann 2020, IMF 2020a).

The joint World Bank-IMF DSAs for low-income countries, which are structured examinations of developing country debt based on the Debt Sustainability Framework, for the time being also fail to sufficiently account for climate and other sustainability risks, while overlooking vital investment needs for climate adaptation and resilience or achieving the SDGs (Volz and Ahmed 2020; Volz, Akhtar et al. 2021). Since 2018, the IMF has started to include a climate stress test in its DSAs for low-income countries, focusing primarily on physical risk, such as climate-induced natural disasters.[5] However, transition risks are typically not addressed. The Fund is currently working on enhancing its Debt Sustainability Framework for Market Access Countries and plans to include more explicitly the repercussions of climate change on debt sustainability. These are important moves in the right direction, but DSAs also need to systematically account for risks of rising cost of capital, stranded asset risk, as well as investment needs to implement development strategies that will reduce dependency of the economy and of public revenues on fossil fuel-related activities, including fossil exports.

At the regional level, the IMF has organised a number or regional dialogues for Pacific islands and the Caribbean.[6] Among the flagship publications for regional surveillance, the Regional

[4] The IMF (2021a: 41) states: "A textual analysis of 192 FSAP reports (up to 2019) found that 33 (17 percent) contained meaningful references to risk factors such as droughts, floods, and storms." Besides occasionally mentioning such risks factors, however, the FSAP reports failed to analyse these in depth, let alone conduct meaningful scenario analysis.

[5] An example was the latest Debt Sustainability Analysis that was carried out for Somalia as part of the Enhanced Heavily Indebted Poor Countries Initiative in 2020, which includes a simulation of a climate shock scenario (IMF 2020b).

[6] These included a High-Level Dialogue on 'Enhancing Macroeconomic Resilience to Natural Disasters in the Pacific Islands' in 2015, a workshop and High-Level Pacific Islands Dialogue on 'Building Resilience to Natural Disasters and Climate Change' in 2017, and a High-Level Conference on 'Building Resilience to Disasters and Climate Change in the Caribbean' in 2018.

Economic Outlooks (REO), to date only the 2020 REO for Sub-Saharan Africa had a special chapter dedicated to 'Adapting to Climate Change in Sub-Saharan Africa' (IMF 2020c). The 2021 REO for Sub-Saharan Africa comprised a 3-page, high-level discussion of climate risks as well as a box on the implications of carbon pricing for Sub-Saharan Africa (IMF 2021c). The 2021 REO for Latin America and the Caribbean (LAC) included a short annex dedicated to climate change challenges in LAC (IMF 2021d), while the 2021 REO for Middle East and Central Asia featured a one-page box on climate change challenges in the Middle East and Central Asia (IMF 2021e). The Asia and Pacific Department and Fiscal Affairs Departments jointly published a study on fiscal policies to address climate change in Asia and the Pacific (Dabla-Norris et al. 2021).

The IMF's global surveillance has to date not systematically addressed climate-related macrofinancial risks in a major report or integrated this issue in its regular monitoring exercises. The IMF published the already-mentioned chapter on the impact of weather shocks on economic activity in low-income countries in the October 2017 WEO report (IMF 2017a), a chapter on sustainable finance in the 2019 Global Financial Stability Report (IMF 2019c) and an analysis of mitigating climate change in the 2019 Fiscal Monitor, which focused on carbon pricing (IMF 2019b). Indeed, over the last years, the IMF has become a leading advocate of carbon taxes and fossil fuel subsidy reforms (e.g. Parry, Black, and Vernon 2021). During the COVID-19 crisis, the Fund adopted a strong rhetoric calling for a green recovery and "building back better".[7] This was backed up by numerous analytical pieces on the need to tackle climate risks and boost resilience. This included a chapter on growth- and distribution-friendly strategies for mitigating climate change in the October 2020 WEO (IMF 2020e) while the 2021 Global Financial Stability Report comprises a chapter on the role of investment funds in fostering the transition to a green economy (IMF 2021f).[8] The April 2021 WEO features a short discussion of the need for coordinated global policy action on climate and a box on who suffers most from natural disasters (IMF 2021g). The October 2021 WEO makes numerous, rather general, references to climate policies and the green economy but contains no substantial analysis of climate risks (IMF 2021h). The IMF also published a note for the G20 on reaching net zero emissions (IMF 2021i). However, while climate change gets now frequently mentioned in the IMF's analytical pieces and surveillance reports, the Fund is still some way from systematically integrating physical and transition risks in its surveillance work and the models underlying it.

This was recognised in a staff background paper on "Integrating Climate Change into Article IV Consultations" (IMF 2021j) prepared for the 2021 Comprehensive Surveillance Review (IMF 2021k). In it, the IMF acknowledged that "a systematic account of how to integrate climate

[7] See, for instance the September 2020 issue of the IMF's Finance and Development magazine on resilience (IMF 2020d).

[8] The 2020 Fiscal Monitor comprised a box on estimating public investment needs for climate change adaptation (IMF 2020f).

change into surveillance has been lacking to date" (IMF 2021j).[9] In May 2021, when the IMF Executive Board discussed the 2021 Comprehensive Surveillance Review, "[d]irectors recognized the importance of a more systematic integration into surveillance of macro-critical emerging topics, including climate change" (IMF 2021l). Directors also "stressed that Fund surveillance should be open to different policy approaches to climate change mitigation, that coverage of climate issues in surveillance needs to be consistent with the Fund's surveillance mandate and in line with the Paris Agreement" and "underscored that, wherever macrocritical, climate change adaptation and transition risk in the context of a global shift to a low-carbon economy should be covered in Article IV reports" (IMF 2021l). Following the completion of the surveillance review in May 2021, IMF staff are currently preparing an updated guidance note for surveillance in Article IV consultations (that will replace the latest guidance released in 2015) which will cover climate issues. In a July 2021 policy paper proposing a strategy to help member countries address climate change-related policy challenges (IMF 2021m), IMF staff proposed coverage of climate-related issues in about 60 Article IV consultations per year (Table 2). For 10 climate-vulnerable countries per annum, granular assessments of "country-specific climate vulnerabilities, adaptation policies, and financing needs to build resilience" (IMF 2021m: 15) shall be conducted as part of new Climate Macroeconomic Assessment Programs which would then feed into Article IV consultations.

Table 2: Article IV consultations: Targeted outputs

Type of climate-related policy challenge and objectives	Coverage
Adaptation and resilience building	
Objective: Cover 60 climate vulnerable countries every 3 years	
Based on a Climate Macroeconomic Assessment Program	10 per year
Without a Climate Macroeconomic Assessment Program	10 per year
Climate change mitigation	
Objective: cover the 20 largest emitters of GHGs every 3 years	
In-depth coverage	6–7 per year
Transition management to a low-carbon economy	
Objective: cover all countries every 5–6 years	
In-depth coverage	8–9 per year
More standardised coverage	25 per year

Source: IMF (2021m), Table 1.

[9] The staff background paper also "argues that domestic policy challenges related to climate change – such as adaptation efforts for climate vulnerable countries, or policies to deliver a country's Nationally Determined Contribution under the Paris climate accord – are covered by the IMF's bilateral surveillance mandate and therefore valid topics for Article IV consultations wherever these challenges cross the threshold of macro-criticality" (IMF 2021j: 1). It also asserts that "[c]limate change mitigation is a global policy challenge and therefore falls under multilateral surveillance. The paper proposes a pragmatic approach that focusses especially on the mitigation efforts of the 20 largest emitters of greenhouse gases" (IMF 2021j: 1).

To facilitate analysis of climate risks and impacts, in April 2021, the IMF launched a "Climate Change Indicators Dashboard" (https://climatedata.imf.org), an interactive online platform that brings together various climate indicators. In June 2021, the IMF also launched the IMF Staff Climate Notes Series with the goal of quickly disseminating succinct IMF analysis on critical economic issues related to the impact of climate change on macroeconomic and financial stability, including on mitigation, adaptation, and transition to member countries and the broader policy community. To date, eight IMF Staff Climate Notes have been published (Black et al. 2021; Ferreira et al. 2021; Gonguet et al. 2021; Parry, Black and Roaf 2021; Parry, Dohlman et al. 2021; Bellon and Massetti 2022a, 2022b; Aligishiev et al. 2022).

With respect to technical assistance, the IMF – together with the World Bank – has thus far conducted so-called Climate Change Policy Assessments for six countries: the Seychelles (June 2017), St. Lucia (June 2018), Belize (November 2018), Grenada (July 2019), the Federated States of Micronesia (September 2019), and Tonga (June 2020).[10] Climate Change Policy Assessments provide "an overarching assessment of countries' climate strategies – as articulated in their Nationally Determined Contributions (NDCs) and other government documents" and "are intended to help countries build coherent macro-frameworks for responding to climate change, which could improve prospects for attracting external finance and put future revisions to NDCs on a sound footing" (IMF 2020g). The Climate Change Policy Assessments will be replaced by the already-mentioned Climate Macroeconomic Assessment Programs, which shall have "a stronger macroeconomic and financial focus" (IMF 2021m: 20).

The IMF Institute for Capacity Development (ICD) is also planning to offer climate-related courses on fiscal issues, financial sector issues, climate data, macro modelling, and legal and financial integrity issues to member governments, including via its regional training centres. The IMF is also planning to make its new "climate 101" course, which was launched in 2022 and is mandatory for all IMF economists, available via edX, an open online course provider.

Regarding the IMF's third main area of work, supporting member countries facing balance of payments difficulties and providing temporary financing, the IMF has a Rapid Credit Facility (RCF) and a Rapid Financing Instrument (RFI) which can be each used in catastrophe situations including climate disasters. The RCF "provides rapid concessional financial assistance with limited conditionality to low-income countries (LICs) facing an urgent balance of payments need" (IMF 2020h). The RCF's concessional financial support is provided exclusively to LICs through the Poverty Reduction and Growth Trust (PRGT). Member countries that are not PRGT-eligible can access the RFI (IMF 2020i).[11] However, while both the RCF and RFI provide quick access to finance, they are both quota-based and provide only small emergency support. The IMF has not yet had a meaningful discussion about adjusting these facilities or create a new

[10] See Cheasty et al. (2017); Cheasty et al. (2018); Bonato et al. (2018); Davies, Nozaki et al. (2019); Davies, Lissovolik et al. (2019); Daniel et al. (2020). See also Cantelmo et al. (2019).
[11] The RFI replaced the Emergency Natural Disaster Assistance and Emergency Post-Conflict Assistance facilities.

facility that would be tailored to support members in responding to shocks related to climate change.

The IMF toolkit also comprises the Catastrophe Containment and Relief Trust (CCRT), which enables the Fund "to provide grants for debt relief for the poorest and most vulnerable countries hit by catastrophic natural disasters or public health disasters" (IMF 2021n). However, for the time being only 29 countries are eligible for support from the CCRT. For the majority of member countries, including climate vulnerable developing countries, the IMF has so far no specific frameworks or instruments to deal with climate-related debt. In 2021, the IMF proposed the creation of a new trust fund, the Resilience and Sustainability Trust (RST), as a way of channelling newly issued SDRs to developing countries to support resilient and sustainable growth in the post-pandemic period. All low-income countries, all developing and vulnerable small states, and middle-income countries with per capita below roughly $12,000 would be eligible to receive financing from the proposed RST (Pazarbasioglu and Ramakrishnan 2022). Details for the RST are still being finalised and must be endorsed by the Board. The RST is supposed to be operational by the end of 2022, with an initial endowment aimed at US$50 billion (Pazarbasioglu and Ramakrishnan 2022).

The Fund also charted new territory in March 2021 when the Executive Board approved a 36-month US$1.8 billion arrangement under the Extended Fund Facility to help support Costa Rica's recovery and stabilise its economy (IMF 2021o). This lending arrangement grants climate change a central role and includes a roadmap for climate resilience as a structural benchmark.

Overall, the Fund has come a long way since recognising that "climate change is potentially macro-critical" (IMF 2019a). In the 2021 climate strategy paper, IMF staff argue "that the time has come for a systematic and strategic integration of macro-critical aspects of climate change into the IMF's core activities" (IMF 2021m: ii). Critical first steps have been taken to incorporating climate in the Fund's surveillance and technical assistance activities, and there is a clear plan for scaling this up and doing it in a more systematic and comprehensive manner. Importantly, the Fund has started to train its own staff and hire new staff with specific climate expertise.[12] However, much remains to be done in terms of surveillance and technical assistance, and even more so regarding the development of its financing instruments. Section 4 will discuss further steps that the Fund should take.

3. Regional financing arrangements and climate change

If the IMF was slow to recognise and address the climate challenge, this is even more true for RFAs. This section briefly reviews what the major RFAs – the Arab Monetary Fund, the Chiang Mai Initiative Multilateralisation with its surveillance unit ASEAN+3 Macroeconomic Research Office, the Eurasian Fund for Stabilization and Development, the European Stability

[12] The IMF climate strategy paper proposed 95 full-time equivalents to implementing the proposed climate strategy (IMF 2021m).

Mechanism, and the Latin American Reserve Fund – have done thus far with respect to climate change. It is important to highlight that the different RFAs have diverse mandates and remits. For instance, the European Stability Mechanism and the Latin American Reserve Fund do not conduct regular macroeconomic and fiscal surveillance of their member countries.

Arab Monetary Fund

The Arab Monetary Fund (AMF), which has 22 member countries, all of which face significant climate risks,[13] provides short- and medium-term credit facilities to member states with balance of payments difficulties. The AMF is holding periodic consultations with its members on their economic conditions and policies and provides technical assistance to member's banking and monetary institutions. To date, climate has not played a noteworthy role in these deliberations. The AMF's Annual Report 2020 (AMF 2021) is the first such report that mentions a few climate-related activities. In June 2020, the AMF published "General Guidelines for Central Banks to Deal with the Implications of Natural Disasters and Climate Changes on Banking System and Financial Stability" (AMF 2020), a 12-page document that puts forward 29 principles. The guidance highlights the need for central banks to develop comprehensive natural disaster management and governance frameworks. Among others, it recommends that central banks conduct climate stress tests for the financial system. The AMF has no lending facilities for climate emergencies.

Chiang Mai Initiative Multilateralisation / ASEAN+3 Macroeconomic Research Office

The ASEAN+3 Macroeconomic Research Office (AMRO), which conducts macroeconomic surveillance for the ASEAN+3 group, has only recently recognised climate change as a major challenge it needs to address in its operations.[14] The 2018 edition of AMRO's *ASEAN+3 Regional Economic Outlook* (AREO), AMRO's annual flagship report, for the first time identified climate change as a "perennial risk" and discussed the impacts and risk from natural disasters and climate change in the ASEAN+3 region in a box over three pages (AMRO 2018). Subsequent editions of the AREO repeated the reference to climate change as a "perennial risk". However, among the three reports published since, only the 2020 AREO offered a bit more substantial analysis in the form of a three-page box discussing climate change as a growing risk to regional financial stability (AMRO 2020). The 2021 AREO provides no more than three generic sentences on physical risks (AMRO 2021).

Like the IMF, AMRO conducts annual surveillance visits to its members and produces Annual Consultation Reports. Even though the region, and Southeast Asia in particular, is highly

[13] These are: Hashemite Kingdom of Jordan, United Arab Emirates, Kingdom of Bahrain, Republic of Tunisia, People's Democratic Republic of Algeria, Republic of Djibouti, Kingdom of Saudi Arabia, Republic of Sudan, Syrian Arab Republic, Somali Democratic Republic, Republic of Iraq, Sultanate of Oman, State of Palestine, State of Qatar, Union of The Comoros, State of Kuwait, Republic of Lebanon, State of Libya, Arab Republic of Egypt, Kingdom of Morocco, Islamic Republic of Mauritania, and Republic of Yemen.

[14] ASEAN+3 comprises the ten member countries of the Association of Southeast Asian Nations (ASEAN) – Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam – h as well as China, Hong Kong, Japan and South Korea.

exposed to climate-related physical and transition risks (Beirne et al. 2021), hardly any of the Annual Consultation Reports discuss climate-related risks in a meaningful way. An example is the 2020 Annual Consultation Report for Brunei Darussalam, which identifies climate change as "a key perennial risk, which could severely impact the country's long term economic potential" (AMRO 2022: 15). However, it discusses these risks in merely one paragraph without even mentioning transition risk, a grave omission given Brunei Darussalam's dependency on fossil fuel exports. A review of AMRO's other publications (including working papers, policy papers, analytical notes, and blogs) confirms that climate change was not on AMRO's agenda.[15] The Chiang Mai Initiative Multilateralisation has no financing instruments specifically geared for supporting members facing a climate crisis.

However, AMRO has committed to step up its efforts. In a speech at the 1st V20 Climate Vulnerables Finance Summit in July 2021, AMRO Director Toshinori Doi announced that "AMRO […] will mainstream climate change in our country surveillance work, and collaborate with our member countries to make the region more resilient to disasters, safer for its many communities, and help it to secure "climate prosperity."" (Doi 2021). In 2021, AMRO hired a capacity development expert to develop capacity building activities for member countries in the area of climate change.

Eurasian Fund for Stabilization and Development

The Eurasian Fund for Stabilization and Development (EFSD), which provides budget and balance-of-payments support to its member governments, as well as investment loans to member states or companies, "to overcome negative crisis consequences, to provide long-run sustainability and to foster economic integration of EFSD member countries" (EFSD 2022), has so far not addressed climate change at all.[16] Climate risks have not been considered in the macroeconomic reports that the EFSD publishes regularly for all member countries.

European Stability Mechanism

The European Stability Mechanism (ESM) was established in 2012 to provide financial assistance to member states of the eurozone facing financial difficulty.[17] To avoid duplicating tasks of other European Union institutions or adding to the complexity of the European Union's economic surveillance framework, the ESM conducts no regular macroeconomic and fiscal surveillance of its member countries like the IMF or AMRO.[18] In its analytical work, the ESM has not addressed climate-related challenges to date. It has, however, integrated environmental, social and governance (ESG) considerations into its investment practices and supported the development of sustainable finance policies, including through its participation

[15] The only piece of analysis on a climate topic is a short analytical note on policy challenges for China's carbon neutrality (Zhai and Foo 2022).
[16] The EFSD membership comprises the Republic of Armenia, the Republic of Belarus, the Republic of Kazakhstan, the Kyrgyz Republic, the Russian Federation, and the Republic of Tajikistan.
[17] The 19 countries that use the euro are: Belgium, Germany, Ireland, Spain, France, Italy, Luxembourg, the Netherlands, Austria, Portugal, Finland, Greece, Slovenia, Cyprus, Malta, Slovakia, Estonia, Latvia, and Lithuania.
[18] The ESM conducts only "post-programme surveillance" after loans have been disbursed.

as an observer in the European Commission's Platform on Sustainable Finance and as a member of the International Capital Market Association's Social Bond Working Group. In February 2020, the ESM became a signatory of the United Nations supported Principles for Responsible Investment. In February 2022, the ESM joined the NGFS (ESM 2022). The ESM has no financial support mechanisms for climate-related crises.

Latin American Reserve Fund

The Latin American Reserve Fund (El Fondo Latinoamericano de Reservas, FLAR) does not conduct surveillance activities of its own. In its publications (documents, working papers, discussion papers, and blog posts) and analytical work it has so far not addressed climate issues. At its 2020 annual conference, FLAR included a panel discussion on "Climate Change: The Science, the Politics, the Economics". FLAR has no lending tools to support member countries facing a climate-related shock.

Overall, it is fair to say that none of the RFAs has systematically taken the necessary steps to integrate climate change in their analytical and operational frameworks. The AMF, AMRO and the ESF have signalled their commitment to increase efforts in addressing the risks emanating from climate change, while the EFSD and FLAR have hardly engaged with the topic.

4. Climate-proofing the global financial safety net

For mainstreaming climate-related macroeconomic and financial risks assessments in its operations, the IMF and also RFAs need to recognise that climate risks differ from the types of risks that are considered in traditional financial risk analyses. While traditional financial risk evaluation and benchmarks are based on historical performances and thus backward-looking, climate risks are forward-looking in nature and characterised by deep uncertainty, non-linearity and endogeneity. Moreover, climate risks could be amplified by the complexity of the financial system (Battiston and Monasterolo 2019). Ignoring forward-looking climate risks in policy design and implementation omits a major source of macroeconomic and financial stability. Thus, assessing countries' exposures to climate-related macrofinancial risks should be at the core of the IMF's work and also of that of RFAs that conduct surveillance. The macro models currently used by the IMF and other international organisations are not designed to consider climate risks and need to be enhanced to identify the largest sources of macroeconomic and fiscal risks – including transboundary risks (Volz et al. 2021) – and assess the exposures of the private and public sectors to forward-looking climate-related risks. Enriching the analytical frameworks for assessing climate-related risks provides the basis for designing tailored measures to mitigate such risks, while addressing potential trade-offs on sustainable development and inequality.

Going forward, the IMF and also RFAs should make concerted efforts to support their member countries in mitigating and managing climate-related physical and transition risks and also provide assistance in measures aimed at scaling up investment in resilience. The following

measures would help to climate-proof the operations of the IMF and – where applicable – also of RFAs:

i. mainstream systematic and transparent assessments of climate-related financial risks in all operations;
ii. introduce consistent, systematic, and universal appraisal and treatment of physical climate risks and transition risks in surveillance and monitoring for all countries;
iii. ensure that all policy recommendations are aligned with the Paris climate goals;
iv. advance disclosure of climate-related financial risks and promote sustainable finance and investment practices;
v. support member countries in mainstreaming climate risk analysis in public financial management;
vi. support climate-vulnerable countries in dealing with debt sustainability problems;
vii. develop lending instruments for climate emergency financing; and
viii. in the case of the IMF, explore options to use SDRs to support climate vulnerable countries.

(i) Mainstreaming systematic and transparent assessments of climate-related financial risks in all operations

The starting point for the IMF and RFAs is to mainstream a transparent assessment of climate-related financial risks in their operations. As the availability of science-based climate financial risk metrics and methods such as climate stress-testing and climate-financial pricing models increases, the IMF and RFAs have a solid ground for incorporating assessments of climate-related financial risks into their macroeconomic modelling, in order to better inform its policy advices and thus to be able to deliver on its mandate. Given the role of the financial sector in the economy and society, the assessment of climate-related financial risks (and opportunities) should be integrated in a transparent way.

(ii) Introducing consistent, systematic, and universal appraisal and treatment of physical climate risks and transition risks in surveillance and monitoring for all countries

Second, by including a mandatory section on climate risks in its Article IV consultations with all member countries, the IMF can mainstream the assessment of climate risks in countries' financial stability analyses. A consistent, systematic, and universal treatment of climate risks in Article IV consultations will facilitate better management and mitigation of macrofinancial risks through governments and enhance the recognition of such risks by the financial sector. Importantly, a systematic analysis of climate-related macrofinancial risks should not be limited to a few countries deemed highly vulnerable to the physical impacts of climate change. Scenario-based assessment of all sources of vulnerability for the macroeconomy, the financial system, and public finances is needed for all member countries, addressing both physical and transition risks (Bos and Gupta 2019, Volz et al. 2020a).

The IMF could also include a mandatory section on climate-related financial risks to the Financial Sector Assessment Programs it conducts together with the World Bank. Crucially, the

IMF should recognise the unique susceptibilities of climate vulnerable countries, stemming from both physical and transition risks, and support their financial and monetary authorities in developing capacities to better assess and respond to climate risks, e.g. via climate stress-testing to inform the design of prudential policies, when needed.

Likewise, RFAs engaging in surveillance and monitoring activities should integrate climate risks assessments in their macroeconomic and financial risk analysis and discuss ways of mitigating and managing these risks with their membership. A better analysis of climate-related macrofinancial risks will not only enable better micro- and macroprudential policies to safeguard macrofinancial stability, it should also lead to better pricing of these risks by financial markets, which will contribute to overcoming barriers to scaling-up sustainable investment (Monasterolo and Volz 2020).

(iii) Ensuring that all policy recommendations are aligned with the Paris climate goals

Third, the IMF and RFAs should ensure that their policy recommendations are aligned with internationally agreed climate goals. While the IMF has been a leading advocate of carbon taxes and fossil fuel subsidy reforms (e.g. IMF 2019b; Parry, Black, and Vernon 2021), as well as renewable energy subsidies and energy efficiency standards, it has in the past also endorsed tax incentives for fossil-fuel related infrastructure investments (Mainhardt 2020, Sward et al. 2021). While the remit of the IMF and RFAs is not the design of climate policies as such, they should take care that whatever fiscal and other policies they recommend or endorse are in line with the goal of a just transition.

(iv) Advancing disclosure of climate-related financial risks and promoting sustainable finance and investment practices

To meet the commitment of "making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development" made in Article 2.1c commitment of the Paris Agreement, it will be crucial to mainstream sustainability practices in financial decision making. Well-developed financial markets that account for sustainability risks facilitate climate-friendly private sector investment. The IMF's 2019 Global Financial Stability Report highlights the way investors and equity markets have long ignored the growing risk of financial losses associated with climate risk (IMF 2019c). The IMF could use its unique position in international finance to promote the disclosure of climate-related financial risks and the development of sustainable finance and investment practices (e.g. Robins et al. 2021). As an observer of the NGFS, the IMF can play an important role in working with monetary and financial authorities and international organisations like the Bank for International Settlements in acceleration the adoption of sustainable finance policies and practices that will be crucial for both climate change mitigation and adaptation. Indeed, the IMF has already started to make important contributions by co-chairing the NGFS' "Bridging the data gaps" workstream, laying the groundwork for a comprehensive assessment of climate-related data needs and gaps. Likewise, RFAs could work with their member constituents to strengthen sustainable finance policies and practices.

(v) Supporting member countries in mainstreaming climate risk analysis in public financial management

Fifth, the IMF (and RFAs to the extent that they engage in capacity building) could provide support to member countries in strengthening public debt management to enable them to better account for climate risks in public budgets. Importantly, governments should be supported in developing contingency plans and securing pre-arranged contingent financing facilities from different sources, as well as insurance-based solutions.

Through policy advice and technical assistance, the IMF and RFAs can support climate vulnerable countries in climate-proofing public finances. In particular, they can encourage and provide advice to finance ministries on how to analyse the potential impacts of climate change on the medium- to long-term quality and sustainability of public finances and mainstream climate risk analysis in public financial management. Based on climate vulnerability assessments, the IMF and RFAs can help finance ministries identify potential risks on the expenditure and revenue side (Volz, Beirne et al. 2020). The IMF and RFAs could also support member countries in incorporating fiscal buffers for climate-related risks in budget planning. Specifically, they could help promote budgetary instruments for *ex ante* disaster financing, including contingency lines and disaster, reserve, or contingency savings funds (Cevik and Huang 2018). Since debt sustainability can be affected by a country's ability to absorb shocks, it is important that governments of climate vulnerable countries are supported in developing contingency plans including options for securing pre-arranged and pre-agreed pricing of risk transfer instruments. To enhance debt sustainability, the IMF and RFAs could promote a discussion around adding natural disaster clauses to sovereign debt contracts and the use of state-contingent debt instruments such as GDP-linked or cat bonds (IMF 2017b, Volz 2022). Moreover, they should seek to enhance transparency of public debt contracts, and support governments in asserting that assumptions and terms or clauses of debt contracts are realistic and sustainable.

By supporting climate vulnerable countries in strengthening public debt management and engaging with initiatives like the Coalition of Finance Ministers for Climate Action, the IMF and also RFAs can contribute to enhanced debt sustainability and enable a better accounting for climate risks and investment opportunities that deliver high socio-economic and adaptation dividends in public budgets.

(vi) Supporting climate-vulnerable countries in dealing with debt sustainability problems

Sixth, the IMF could play an important role in supporting climate vulnerable countries that are facing debt sustainability challenges or are already in debt distress. As highlighted by Georgieva et al. (2020), a "reform of the international debt architecture is urgently needed". The IMF (2020j) has recently put forward reform options for the international architecture for resolving sovereign debt involving private-sector creditors. At a general level, the IMF could explore options for a sovereign debt restructuring mechanism, as was originally proposed by the IMF two decades ago (IMF 2003), to deal with debt crises.

Beyond this, the IMF ought to make sure that climate risks are sufficiently integrated in debt analysis and policy frameworks for resolving debt crises. As discussed, the IMF's Debt Sustainability Framework does currently not consider climate-related risks for public finances in a systematic way, and in most cases not at all. It also ignores investment needs in climate adaptation to reduce climate vulnerability, which is having adverse effects on the sovereign cost of capital and can amplifies sovereign risk (Buhr et al. 2018, Volz, Beirne et al. 2020). The Debt Sustainability Framework therefore needs to be enhanced to incorporate the impact of climate-related risks on debt sustainability. This is a crucial step for identifying debt vulnerabilities early on so that debt problems can be addressed and delays in debt restructuring, if needed, be avoided. Importantly, assessment should also be rolled out to climate vulnerable middle-income countries.

In the context of the current COVID-19 crisis, which has worsened public finances in the Global South, many low-income and middle-income countries will require debt relief to respond effectively to the crisis and undertake meaningful investment to climate-proof their economies. The IMF will have to play a crucial role in assessing debt sustainability and making sure that debt restructuring, where needed, provides the fiscal space for governments to invest in green and inclusive recoveries that also strengthen climate resilience (Volz, Akhtar et al. 2020, 2021).

Going forward, the IMF should also explore options for the treatment of climate debt, i.e. public debt that has been incurred as a direct result of climate disasters or necessary adaptation measures (Volz 2020). This is particularly relevant for Small Island Developing States, where single events can have devastating effects on the economy and public finances.

(vii) Developing lending instruments for climate emergency financing

Seventh, the IMF and RFAs could explore to what extent their existing emergency financing facilities should be further developed or new climate emergency financing facilities should be developed. This is particularly relevant for Small Island Developing States though options should be explored as well to include other climate vulnerable countries. For the IMF, one option is to raise access under the RCF/RFI, e.g. up to 400-500 percent of quota. Moreover, options should be explored to converting these facilities into grants, particularly for PRGT-eligible countries. A further option would be to establish an entirely new climate disaster emergency facility. The IMF could also explore to link a climate disaster facility to an issuance of SDRs, which would benefit only countries hit by climate disasters.

(viii) In the case of the IMF, exploring options to use SDRs to support climate vulnerable countries

Eighth, the IMF and its membership should consider the possibility of allocating new SDRs as a way of providing vulnerable countries with enhanced liquidity. A general SDR allocation, such as the one in August 2021, benefits primarily large economies since SDRs are distributed in proportion to member countries' IMF quota share. Out of the US$650 billion SDR allocation in 2021, US$376 billion or 58% went to advanced economies. Low-income countries received

only about US$21 billion or 3%, while all African countries together received merely US$32.3 billion, or 5% of the total SDR issuance. With the RST, the IMF has proposed a vehicle through which rich countries, whose historic carbon emissions are the main cause of anthropogenic climate change, can make their SDRs available to vulnerable developing countries. However, despite a commitment by the G20 to donate US$100bn to developing countries, the IMF struggles to raise the envisaged US$50 billion for the RST (Mutazu 2022). Moreover, the RST has been criticised for the conditionality attached to access to RST funds (Mutazu 2022). Another option would be to develop a mechanism where new SDRs are issued exclusively to climate vulnerable countries. Such an SDR issuance could be linked to exogenous shocks such as climate-induced disasters, eliminating problems with moral hazard. As climate vulnerable countries that have hardly contributed to global climate change suffer the biggest impacts, SDR issuances for climate vulnerable countries could be a way of enhancing resilience and global climate justice at the same time.

Clearly, there is a lot of room for the IMF to mainstream climate in its operations and support its membership in preparing for and coping with the climate crisis in line with its mandate. The role that RFAs can and should assume depends on their respective mandate and resources, but also the context in which they are operating. For instance, the AMF, AMRO, the EFSD, and FLAR have in their membership countries facing large physical and/or transition risk with limited options for obtaining external crisis financing should they need it. They need to consider what kind of lending facilities could best support their membership in coping with the climate crisis. The ESM, on the other hand, has a membership that is comparatively less climate vulnerable and has greater access to alternative funding sources, not least through the European Commission. Nonetheless, also the ESM needs to consider whether and how to adjust its lending toolkit. Certainly, all RFAs need to build capacities for identifying macrofinancial risks arising from climate change and positioning themselves strategically to best support their membership in weathering the climate crisis.

5. Conclusion

The macrofinancial risks arising from climate change pose a serious threat to economic development. The macrofinancial impacts of climate change can trigger balance-of-payments or financial crisis. For the time being, the institutions that form the GFSN are not sufficiently equipped to properly analyse these risks, nor do they have the policy frameworks or lending instruments to mitigate or manage climate-related crises. Since 2015, when the IMF identified climate change as an “emerging structural issue”, the Fund has come a long way in acknowledging the macrocriticality of climate change. Yet, at the operational level, the IMF has been too slow in addressing climate-related macrofinancial risks. Since 2019, the IMF has clearly become more ambitious in incorporating climate in its operations. It remains to be seen how successful these efforts will be. Among RFAs, none has so far taken the necessary steps

to integrate climate change in their analytical and operational frameworks. The AMF, AMRO and the ESF have signalled their commitment to increase efforts in addressing the risks emanating from climate change, while the EFSD and FLAR have hardly engaged with the topic. Overall, both the IMF and RFAs need to increase efforts to climate-proof their policies and frameworks to better support their membership in mitigating and managing climate-related macroeconomic and financial risks.

Against this backdrop, this article puts forward seven recommendations, calling on the IMF and RFAs to (i) mainstream systematic and transparent assessments of climate-related financial risks in all their operations; (ii) introduce consistent, systematic, and universal appraisal and treatment of physical climate risks and transition risks in surveillance and monitoring for all countries; (iii) advance disclosure of climate-related financial risks and promote sustainable finance and investment practices; (iv) support member countries in mainstreaming climate risk analysis in public financial management; (v) support climate-vulnerable countries in dealing with debt sustainability problems; (vi) develop lending instruments for climate emergency financing; and (vii) in the case of the IMF, explore options to use SDRs to support climate vulnerable countries.

The lack of preparedness to adequately address climate-related risks and strengthen climate resilience is a glaring hole in the GFSN. Climate proofing the GFSN is not only a matter of safeguarding national, regional or even global financial stability. It is also a matter of climate justice, as poorer countries are disproportionally affected by the consequences of global warming. It is therefore imperative that the IMF rapidly strengthens it analytical capacity and develops its policy frameworks to adequately help its membership in mitigating and managing climate-related macrofinancial risks. RFAs can complement this, according to their mandates and capacities.

While emphasising the role of the IMF and RFAs in addressing the climate crisis, it is important to also highlight that their actions cannot substitute for concerted efforts by other actors. Neither the IMF nor RFAs are development institutions. A climate-proofing of the GFSN needs to be supplemented by more ambitious global climate policies, in which multilateral development banks and development finance institutions ought to play substantial roles in supporting mitigation and adaptation efforts.

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